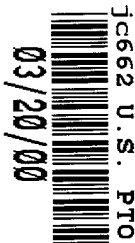


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20 March 2000

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Attorney Docket: P56011

Sir:

Submitted herewith is the following patent application:

Inventor: 1) CHUN-GEUN CHOI, 2) HONG-JAE KIM

Title: VIDEO DISPLAY APPARATUS HAVING HOTKEY
FUNCTIONS AND A METHOD THEREFOR



Please find attached hereto an application for patent which includes: Specification and Abstract, Claims, original Declaration And Power of Attorney, Assignment, and a certified copy of the foreign priority document identified below:

Verified Showing of Small Entity Status: **NO**

Drawings: Formal drawings, 5 sheets, Figures 1 through 5B

Claim of priority under 35 U.S.C. §119: **YES**

** The Republic Of Korea Application No. 22400/1999 filed on 15 June 1999.

FEE (see formula below): CHECKS ARE ENCLOSED CK#36243 (\$690.00) & #36244 (\$40.00)

Basic Fee \$345/690 **\$690.00**

Additional Fees:

Total number of claims in excess of 20: ____ times \$9/18 . **\$0.00**

Number of independent claims in excess of 3: ____ times \$39/78 **\$0.00**

Multiple Dependent Claims \$130/260 **\$0.00**

An Assignment is likewise enclosed: Recording Fee \$40 . . **\$40.00**

Filing Non-English specification **\$0.00**

TOTAL FEES FOR THE ABOVE APPLICATION \$730.00

Assistant Commissioner for Patents
20 March 2000
Page Two

Docket No.: P56011

Inventor: 1) CHUN-GEUN CHOI, 2) HONG-JAE KIM

Title: VIDEO DISPLAY APPARATUS HAVING HOTKEY
FUNCTIONS AND A METHOD THEREFOR


Assistant Commissioner is authorized to charge our Deposit Account No. 02-4943 for any **additional charges** necessary towards payment of the filing fee for the above-referenced application. Please notify the undersigned attorney of any transaction regarding our Deposit Account.

In view of the above, it is requested that this application be accorded a filing date pursuant to 37 CFR 1.53(b).

Please address all correspondence to:

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Respectfully submitted,



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REB/na

TITLE

**VIDEO DISPLAY APPARATUS HAVING HOTKEY FUNCTIONS AND A
METHOD THEREFOR**

CLAIM OF PRIORITY

This application makes reference to, incorporates the same herein, and claims all benefits accruing under 35 U.S.C. §119 from my application *VIDEO DISPLAY APPARATUS HAVING A HOTKEY FUNCTION AND METHOD USING THE SAME* filed with the Korean Industrial Property Office on 15 June 1999 and there duly assigned Serial No. 22400/1999.

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a video display apparatus having a hotkey function and a method of operating the apparatus. More particularly, the invention concerns a video display apparatus having a hotkey function for menu-selection and manipulation of user-selected, frequently utilized video apparatus control functions. The invention also concerns a method of operating a video display apparatus by use of a hotkey button.

Description of the Prior Art

Video display apparatuses, such as a television receiver and, a monitor, have various functions to permit users to adjust them. Such TV functions include color adjustment (*e.g.*, tint), a

1 volume control for an audio signal, and audio signal mute. Monitors have functions such as screen
2 size adjustment, screen position adjustment, screen contrast/brightness adjustments, and audio signal
3 mute.

4 Most video display apparatuses have one or more buttons for users to control them. The
5 buttons are used to output signals for executing these functions immediately or else to output signals
6 for displaying on-screen display (OSD) menu screens. Each menu screen has one or more menu
7 items such as “make screen larger or smaller”, “move screen up or down”, and “make sound louder
8 or quieter”.

9 As the number of video functions has multiplied, embodying the functions has created a need
10 for additional buttons to implement the additional functions. Accordingly, using a function control
11 method in a video display apparatus embodied in an OSD menu method has become relatively more
12 advantageous than the previous button method. However, the resulting multiplication and greater
13 complexity of menus and sub-menus may confuse users or irritate them. As functions multiply, the
14 time period for selecting an OSD menu item is lengthened since the user must repeatedly press arrow
15 buttons to select an OSD menu item. Multimedia developments create even greater complexities
16 for users.

17 In a known TV menu system illustrated in Figs. 1A-1B, when a user presses an OSD button
18 equipped on a front panel of a video display apparatus an OSD menu screen 2 appears with a cursor
19 placed on a predetermined menu item. For the user to select a menu item on the OSD menu screen,
20 the user moves the cursor by using arrow buttons on the video display or by using an input device
21 (remote control device). Thus, for the user to select “AUDIO MUTE” function in Fig. 1A, the user

moves the cursor three times downwards from its initial position by using an arrow button. Then, an OSD menu screen 4 as shown in Fig. 1B is displayed, while audio sound is sent out through a speaker.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide a video display apparatus having a hotkey function. The video display apparatus has hotkey buttons, capable of controlling the video display apparatus by a function set by a user. The user selects as a hotkey button an item frequently selected by that user from the menu items for controlling the functions of the video display apparatus.

The video display apparatus of the present invention comprises: a button unit including hotkey buttons for providing key signals corresponding to menu items of an OSD menu that the user selects; a memory unit having information on OSD menu items set for the hotkey buttons; an OSD unit for providing an OSD character display signal to a video processing unit in response to a control signal sent from an external device and for displaying OSD characters on the screen; and a control unit for reading information for an OSD menu item stored in the memory unit when a button is selected by the user.

The hotkey button setting method for a video display apparatus of the invention comprises the steps of (1) determining if a menu item from an OSD menu is selected by a user; (2) generating an OSD menu screen in case that the menu item is selected; (3) determining if the user set a hotkey button information on a menu item on the OSD menu screen; and (4) changing hotkey button

1 information stored in a memory unit when a hotkey button is set on a menu item, and storing such
2 hotkey button information in the memory unit if the user sets the hotkey button information on a
3 given menu item.

4 BRIEF DESCRIPTION OF THE DRAWINGS

5 A more complete appreciation of the invention, and may of the attendant advantages, thereof,
6 will be readily apparent as the same becomes better understood by reference to the following detailed
7 description when considered in conjunction with the accompanying drawings in which like reference
8 symbols indicate the same or similar components.

9 Figs. 1A-1B depict a screen view showing a known OSD menu item selection and process.
10 Fig. 1A is the screen as it first appears. Fig. 1B is the screen after AUDIO MUTE function is
11 selected.

12 Fig. 2 schematically shows a structure of a video display apparatus having hotkey functions
13 according to an embodiment of the present invention.

14 Fig. 3 is a flow chart for a method for re-setting hotkey button information in a memory
15 according to the embodiment of the present invention.

16 Fig. 4 is a flow chart for a processing method when a hotkey button is selected according to
17 an embodiment of the present invention.

18 Figs. 5A-5B depict a screen view showing an embodiment of the present invention. Fig. 5A
19 is the screen as it first appears. Fig. 5B is the screen after AUDIO MUTE function is selected.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred embodiment of the present invention will be described in detail with reference to the accompanying drawings.

Referring to Fig. 2, which is a schematic showing a video display apparatus having hotkey functions according to an embodiment of the present invention, it is seen that a button unit 10 has buttons and is mounted on the body of a video display apparatus such as a television receiver. Button unit 10 may include several hotkey buttons each of which has information on one OSD menu item of OSD menu items selectable by a user.

A memory unit 20 stores information corresponding to each of the selectable OSD menu items and information on each of hotkey buttons. Memory unit 20 also stores information on hotkey buttons which is changeable by means of a control unit 30.

Control unit 30 sends an OSD character display signal to an OSD unit 340 when an OSD menu item is selected through the button unit 10. Further, control unit 30 can change hotkey button information stored in memory 20 and will then store the changed hotkey button information on a user-selected OSD menu item, which is selected by using button unit 10. Further, control unit 30 can control the entire system by reading hotkey button information stored in memory unit 20 when a hotkey button is selected through button unit 10. At this time, if there does not already exist any stored information on the selected hotkey button, control unit 30 controls the entire system by reading information from an OSD menu item set as a default.

Turning now to an embodiment of the present invention for use with a monitor, control unit 30 is adapted to input a color signal and a synchronization signal from a video card built into a

computer and controls a video processing unit 50. In another embodiment of the invention for use with a television receiver, control unit 30 is adapted to input a broadcast signal received through an antenna to control video processing unit 50.

An OSD unit 40 outputs an OSD character signal according to an OSD character display signal from the control unit 30. Video processing unit 50 synthesizes a video signal and the OSD character signal from the OSD unit 40, according to a control signal from control unit 30, which causes display of characters on a screen.

A method for storing hotkey button information and selecting a hotkey button in a video display apparatus according to an embodiment of the present invention is now described with reference to the accompanying drawings.

Control unit 30 has two principal modes. One is a "setting mode" for setting a frequently used OSD menu, and the other is a "processing mode" for controlling the entire system based on user-selected hotkey button information.

First, the setting mode is described with reference to Fig. 3. If a user presses a button (not shown) for an item of an OSD menu for a video display apparatus, control unit 30 receives a signal from the pressed button and sends an OSD character display signal to OSD unit 40. This causes display of an OSD menu on a screen. OSD unit 40 receives the OSD character display signal and sends an OSD character signal to video processing unit 50. The video processing unit adds the OSD character signal to a video signal to display an OSD menu on the screen (step S320). Control unit 30 then determines whether a user has selected a menu item from the OSD menu displayed on the screen. If a menu item was selected, control unit 30 determines whether hotkey button was selected.

1 If a hotkey button was selected, the control unit changes hotkey button information stored in
2 memory unit 20 to newly selected information on the OSD menu and stores the changed information
3 (S350).

4 If no hotkey button was selected, control unit 30 reads from memory unit 20 and executes
5 the information corresponding to the OSD menu item (S370) to control an entire function of the
6 video display apparatus.

7 If in step S330, the selected OSD menu item from an OSD menu on the screen was found
8 not to be included, control unit 30 checks if a cancel signal was inputted by a user. If a non-signal
9 predetermined input time period lapses, the system determines whether a cancellation was made
10 (S360). If so, control unit 30 stops execution of the process.

11 The processing mode of control unit 30 for a hotkey button is now described with reference
12 to Fig. 4. First, the control unit determines whether a hotkey button was selected by a user (S410).
13 If so, detection circuitry (*e.g.*, computer program instructions executed in a microprocessor) in the
14 control unit determines whether information on the hotkey button is set in memory unit 20 (S420).

15 If it is determined that information on the hotkey button exists, the detection circuitry
16 (“detector”) of control unit 30 reads the information on the hotkey button from memory unit 20
17 (S430). The control unit then executes its operation to control the entire system according to a signal
18 corresponding to the information (S450). If it is determined that, in step S420, information on a re-
19 set hotkey button does not exist in memory unit 20, the detector of control unit 30 reads hotkey
20 button information which is set as a factory default (S440) and executes its operation to control the
21 entire system (S450).

1 If it is determined in step S420 that the hotkey button information re-set in memory unit 20
2 does not exist, the detector of control unit 30 of the video display apparatus reads the hotkey button
3 information which is set as a factory default from the memory unit (S440), and executes its
4 operation for the entire system in response to the hotkey button information (S450).

5 Fig. 5 is a screen view illustrating on embodiment of the present invention. As shown in Fig.
6 5, if a user selects a button for outputting an OSD menu screen using button unit 10, control unit 30
7 controls OSD unit 40 to display an OSD menu 6 on the screen as shown in Fig. 5A. If a hotkey
8 button is then selected by a user, control unit 30 changes hotkey button information set in memory
9 unit 20 to "AUDIO MUTE" information and stores the changed hotkey button information. Then,
10 if a user selects the hotkey button, as shown in Fig. 5B, an "AUDIO MUTE" message on screen
11 menu 8 is outputted and the sound outputted through the is muted.

12 Further, when OSD menu items are increased due to increasingly diverse functions of the
13 video display apparatus, plural subscreens may be furnished. A desired OSD menu screen out of the
14 plural subscreens may be controlled to be stored in memory unit 20 as hotkey button information.

15 Accordingly, if a user wishes to control frequently used functions, from OSD menu screens
16 or menu items, the user sets hotkey button information to display a desired OSD menu screen
17 immediately without other OSD menu screens. Thus, the video display apparatus of the invention
18 permits the user to control the functions of the video display apparatus with more ease and
19 convenience.

20 Although the preferred embodiments of the present invention has been described, it will be
21 understood by those skilled in the art that the present invention should not be limited to the described

1 preferred embodiment. Rather, various changes and modifications can be made within the spirit and
2 scope of the present invention as defined by the following claims.

What is claimed is:

1 1. A video display control apparatus having hotkeys for a user to invoke and control a
2 function of a video display apparatus, said function represented by a menu item from an OSD menu,
3 said video display control apparatus comprising:

4 a button unit comprising a hotkey button adapted for generating a key signal corresponding
5 to a menu item of an OSD menu;

6 a memory unit coupled to the button unit, and adapted for storing information concerning
7 OSD menu items;

8 an OSD unit for outputting an OSD character display signal to a video processing unit in
9 response to said key signal, whereby actuation by a user of said hotkey button causes
10 a screen display of one or more OSD characters; and

11 a control unit for receiving said key signal from said button unit; for reading information
12 concerning an OSD menu item stored in the memory unit, when said key signal is
13 received; and for thereupon sending a control signal to the video display apparatus
14 to control a function thereof.

1 2. The video display control apparatus of claim 1, wherein the OSD menu displays one or
2 more OSD menu items on the screen of the video display apparatus.

1 3. The video display control apparatus of claim 1, wherein said control unit further comprises

2 a detector for determining whether present-time information corresponding to an OSD menu item
3 selected at a present time is identical to past-time information corresponding to an OSD menu item
4 and already stored in the memory unit and, when said present-time information is not identical to
5 said past-time information, for enabling storage of said present-time information in the memory unit.

1 4. The video display control apparatus of claim 1, wherein said function of a video display
2 apparatus is selected from the following group: audio mute, audio volume control, screen position,
3 screen contrast, screen brightness, color, and tint.

4 5. A method of controlling a function of a video display apparatus, said method comprising
5 the steps of:

6 (1) when a user selects a menu item of an OSD menu screen by causing generation of a
7 hotkey button signal, determining whether a hotkey signal setting exists therefor;

8 (2) when no hotkey signal setting exists therefor, executing a control function in response
9 to the hotkey button signal; and

10 (3) when a hotkey signal setting exists therefor, setting the user-selected menu item of the
11 OSD menu screen responsively to the hotkey button signal.

12 6. The method of claim 5, wherein said method comprises the following further step after
13 step (3): when a hotkey signal setting exists therefor, executing a control function in response to the
14 hotkey button signal.

1 7. A method of controlling a function of a video display apparatus, said method comprising
2 the steps of:

3 (1) when a user selects a hotkey button, thereby generating a present-time hotkey button
4 signal, determining whether a stored hotkey button signal identical to the present-time hotkey button
5 signal is stored in a memory unit;

6 (2) if a stored hotkey button signal is identical to the present-time hotkey button signal,
7 executing a control function in response to the stored hotkey button signal; and

8 (3) if no stored hotkey button signal is identical to the present-time hotkey button signal,
9 executing a default control function.

ABSTRACT

A video display apparatus having user-selected hotkey functions and a method of using them is disclosed in which function of the video display system can be changed by a user.

Information on a menu item is selected by a user from an OSD menu which the video display apparatus has is stored in a memory unit as hotkey button information. The information is read from the memory unit to be executed whenever the user selects a given hotkey button. The hotkey button information may be re-set according to the user's desires, so that the user controls the functions of the video display apparatus with more ease and convenience.

FIG. 1A

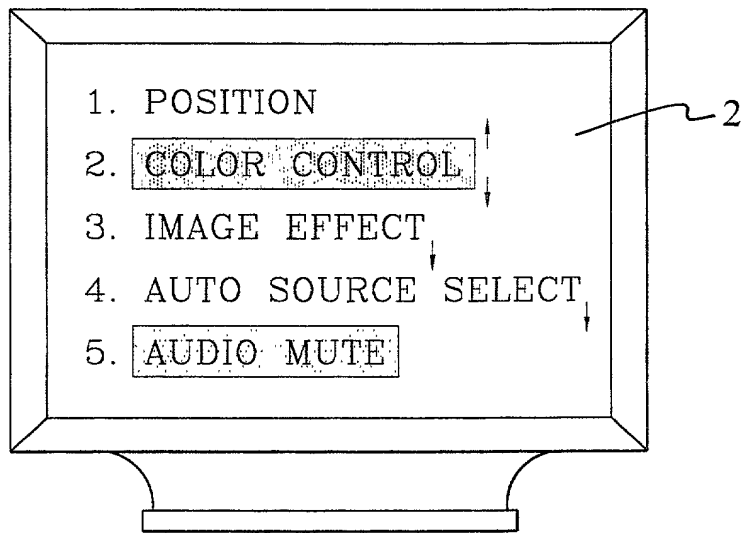


FIG. 1B

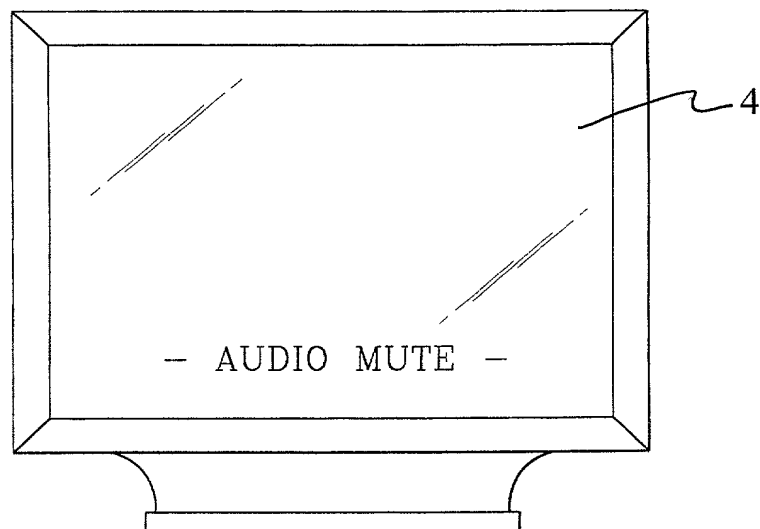


FIG. 2

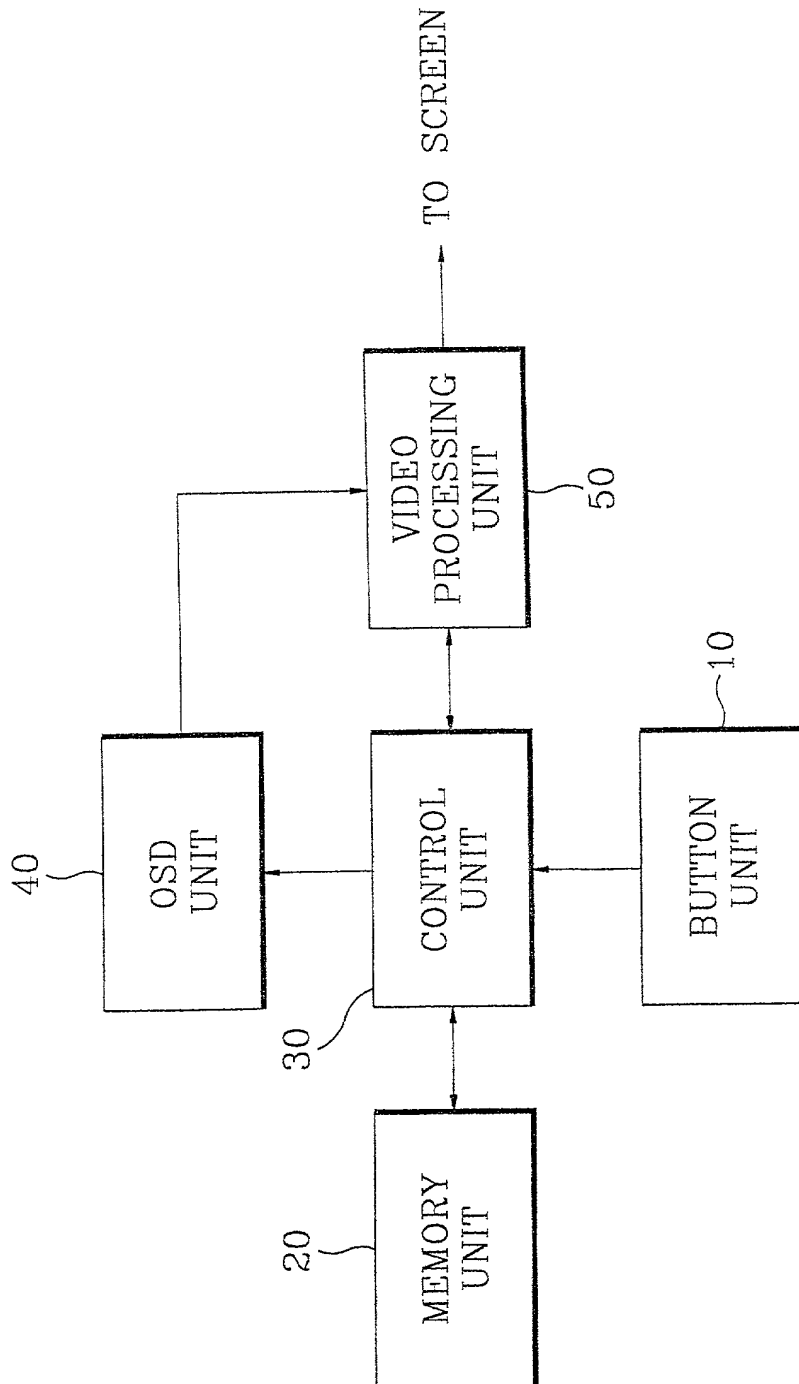


FIG. 3

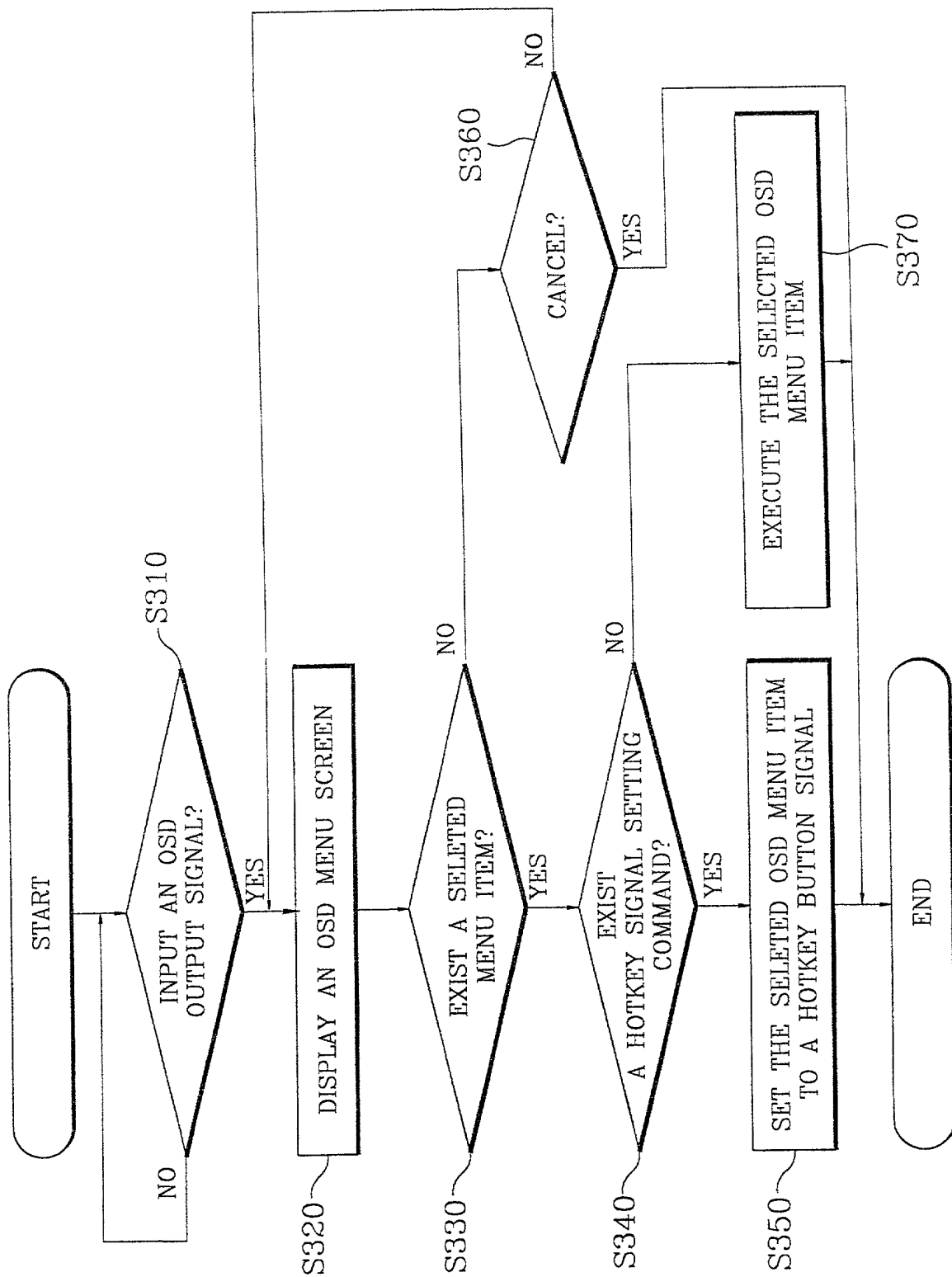


FIG. 4

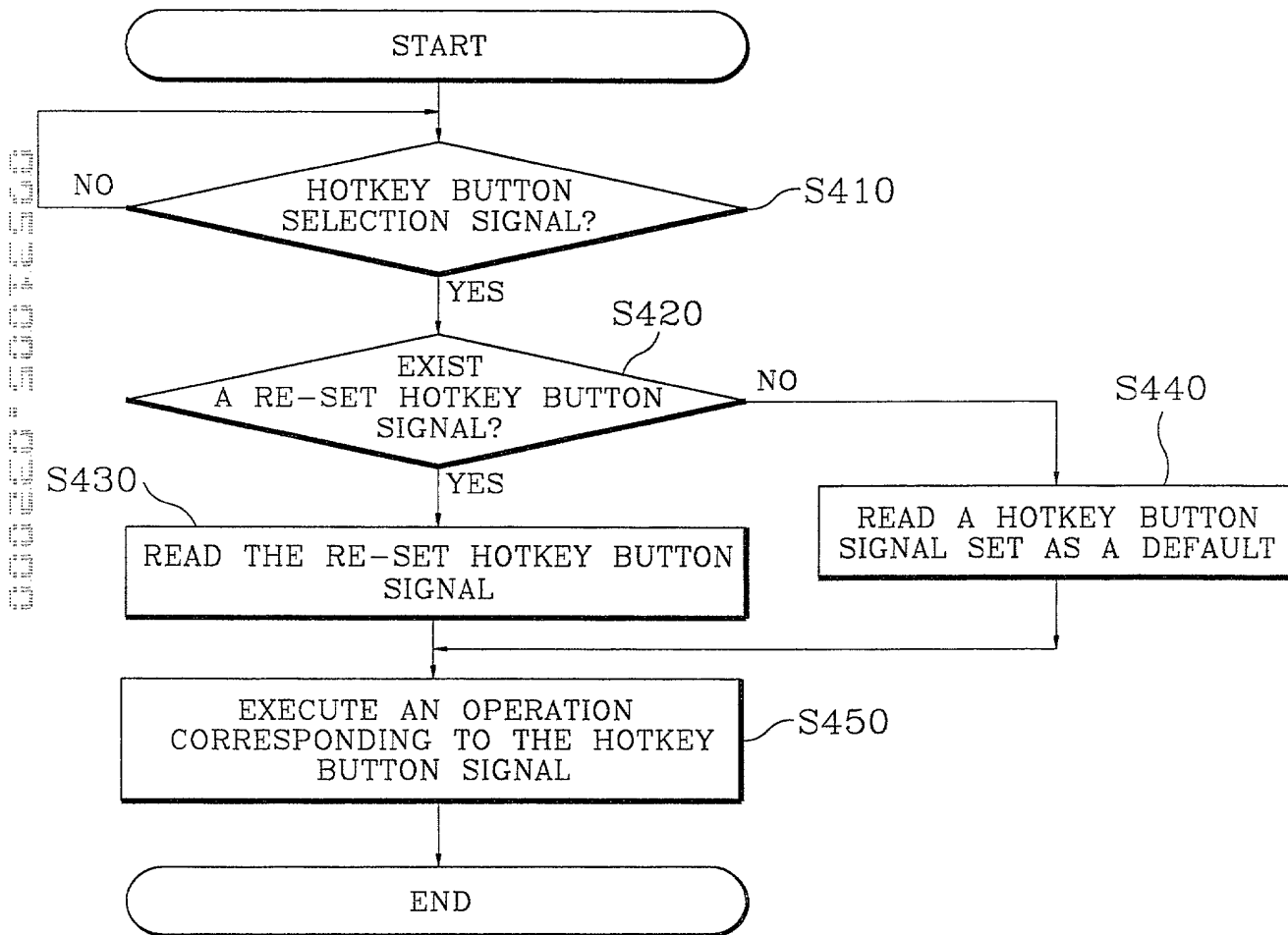


FIG. 5A

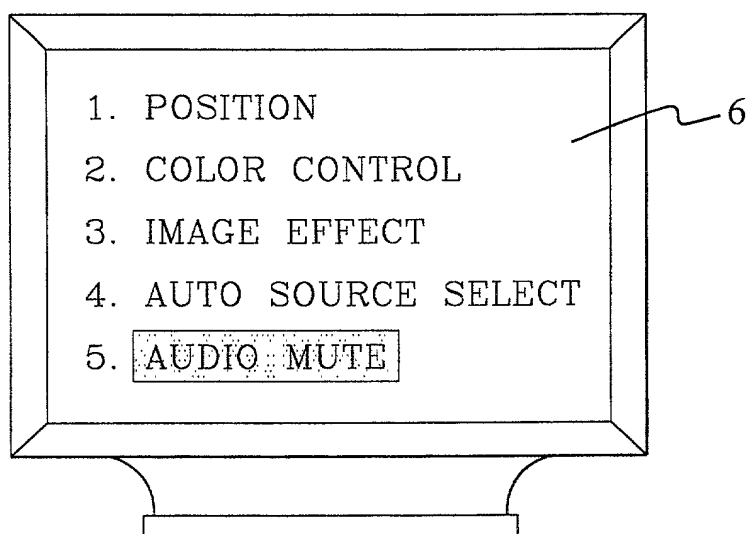
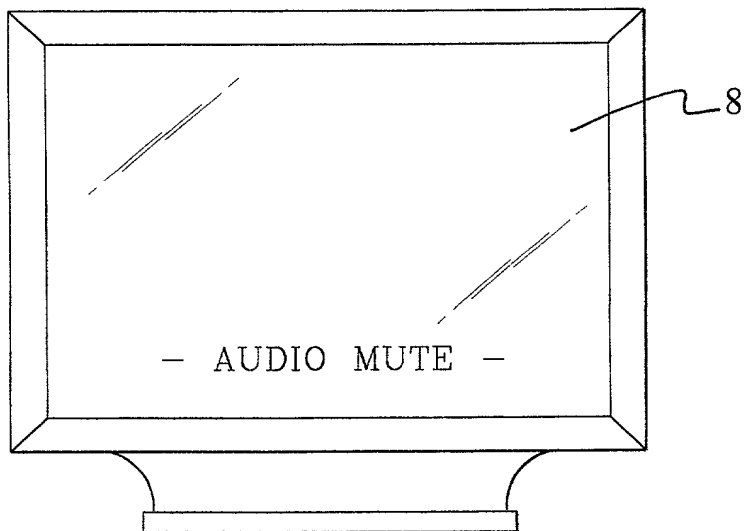


FIG. 5B



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Chun-Geun CHOI, et al.

Serial No.: *To be assigned*

Examiner: *To be assigned*

Filed: 20 March 2000

Art Unit: *To be assigned*

For: VIDEO DISPLAY APPARATUS HAVING HOTKEY FUNCTIONS AND A
METHOD THEREFOR

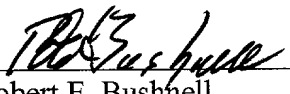
TRANSMITTAL OF DECLARATION

Assistant Commissioner
for Patents
Washington, D.C. 20231

Sir:

This transmittal accompanies the original Declaration for the above-referenced application.

Respectfully submitted,



Robert E. Bushnell,
Attorney for the Applicant
Registration No.: 27,774

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Folio: P56011
Date: 03/20/00
I.D.: REB/na

DECLARATION

AS A BELOW NAMED INVENTOR, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe that I am the original, first and sole (if only one name is listed below), or an original, first and joint inventor (if plural names are listed below), of the subject matter which is claimed and for which a patent is sought on the invention entitled:

TITLE: VIDEO DISPLAY APPARATUS HAVING HOTKEY FUNCTIONS AND A METHOD THEREFOR

the specification of which either is attached hereto or otherwise accompanies this Declaration, or:

☐ was filed in the U.S. Patent & Trademark Office on _____ and assigned Serial No. _____,

☐ and (if applicable) was amended on _____.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to patentability and to the examination of this application in accordance with Title 37 of the Code of Federal Regulations §1.56. I hereby claim foreign priority benefits under Title 35, U.S. Code §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International application which designated at least one country other than the United States, or §119(e) of any United States provisional application(s), listed below and have also identified below any foreign applications for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Priority Claimed:

Yes [X] No []

22400/1999 Republic of Korea 15 June 1999
(Application Number) (Country) (Day/Month/Year filed)

Yes [] No []

(Application Number) (Country) (Day/Month/Year filed)

I hereby claim the benefit under Title 35, U.S. Code, §120, of any United States application(s), or §365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application(s) in the manner provided by the first paragraph of Title 35, U.S. Code, §112, I acknowledge the duty to disclose information material to patentability as defined in Title 37, The Code of Federal Regulations, §1.56(a) which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.) (Filing Date) (STATUS: patented, pending, abandoned)

(Application Serial No.) (Filing Date) (STATUS: patented, pending, abandoned)

I hereby revoke all previously granted powers of attorney and appoint the following attorneys: Robert E. Bushnell, Reg. No. 27,774, Michael D. Parker, Reg. No. 34,973, and Darren R. Crew, Reg. No. 37,806, to prosecute this application and to transact all business in the U.S. Patent & Trademark Office connected therewith and with any divisional, continuation, continuation-in-part, reissue or re-examination application, with full power of appointment and with full power to substitute an associate attorney or agent, and to receive all patents which may issue thereon, and request that all correspondence be addressed to:

Robert E. Bushnell,

Attorney-at-Law

Suite 300, 1522 "K" Street, N.W.

Washington, D.C. 20005-1202

Payor No. 008439

Area Code: 202-408-9040

I HEREBY DECLARE that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 U.S. Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

FULL NAME OF FIRST OR SOLE INVENTOR: CHUN-GEUN CHOI Citizenship: Republic of Korea

Inventor's signature: _____ Date: _____
Residence & Post Office Address: 101-111 Samsung Apt., 76-7 Woonam 2-dong, Paldal-gu, Suwon-city, Kyungki-do, Republic of Korea

FULL NAME OF SECOND JOINT INVENTOR: HONG-JAE KIM Citizenship: _____

Inventor's signature: _____ Date: _____
Residence & Post Office Address: 101-606 Sungwon Apt., 420-2 Mangwon-dong, Mapo-gu, Seoul, Republic of Korea

FULL NAME OF THIRD JOINT INVENTOR: _____ Citizenship: _____

Inventor's signature: _____ Date: _____
Residence & Post Office Address: _____

FULL NAME OF FOURTH JOINT INVENTOR: _____ Citizenship: _____

Inventor's signature: _____ Date: _____
Residence & Post Office Address: _____

☐ Additional inventors are being named on separately numbered sheets attached hereto.

AS A BELOW NAMED INVENTOR, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe that I am the original, first and sole (if only one name is listed below), or an original, first and joint inventor (if plural names are listed below), of the subject matter which is claimed and for which a patent is sought on the invention entitled:

TITLE: VIDEO DISPLAY APPARATUS HAVING HOTKEY FUNCTIONS AND A METHOD THEREFOR

the specification of which either is attached hereto or otherwise accompanies this Declaration, or:

☐ was filed in the U.S. Patent & Trademark Office on _____ and assigned Serial No. _____

☐ and (if applicable) was amended on _____

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to patentability and to the examination of this application in accordance with Title 37 of the Code of Federal Regulations §1.56. I hereby claim foreign priority benefits under Title 35, U.S. Code §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International application which designated at least one country other than the United States, or §119(e) of any United States provisional application(s), listed below and have also identified below any foreign applications for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

| | | | |
|----------------------|-------------------|------------------------|-------------------------------------|
| 22400/1999 | Republic of Korea | 15 June 1999 | Priority Claimed: Yes [X] No [] |
| (Application Number) | (Country) | (Day/Month/Year filed) | |
| _____ | _____ | _____ | Yes [] No [] |
| (Application Number) | (Country) | (Day/Month/Year filed) | |

I hereby claim the benefit under Title 35, U.S. Code, §120, of any United States application(s), or §365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application(s) in the manner provided by the first paragraph of Title 35, U.S. Code, §112, I acknowledge the duty to disclose information material to patentability as defined in Title 37, The Code of Federal Regulations, §1.56(a) which became available between the filing date of the prior application and the national or PCT international filing date of this application:

| | | |
|--------------------------|---------------|--|
| (Application Serial No.) | (Filing Date) | (STATUS: patented, pending, abandoned) |
| _____ | _____ | _____ |
| (Application Serial No.) | (Filing Date) | (STATUS: patented, pending, abandoned) |
| _____ | _____ | _____ |

I hereby revoke all previously granted powers of attorney and appoint the following attorneys: Robert E. Bushnell, Reg. No. 27,774, Michael D. Parker, Reg. No. 34,973, and Darren R. Crew, Reg. No. 37,306, to prosecute this application and to transact all business in the U.S. Patent & Trademark Office connected therewith and with any divisional, continuation, continuation-in-part, reissue or re-examination application, with full power of appointment and with full power to substitute an associate attorney or agent, and to receive all patents which may issue thereon, and request that all correspondence be addressed to:

Robert E. Bushnell,
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Fayor No. 008439
Area Code: 202-408-9040

I HEREBY DECLARE that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 U.S. Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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☐ Additional inventors are being named on separately numbered sheets attached hereto.